D_{50} (Gy)	10-20	20-30	30-40	40-50	50-60	>60	Unknown (no effect)
CONV1	10.3	20.7	13.8	6.9	3.4	10.3	31.0
CONV2	10.0	25.0	25.0	5.0	10.0	10.0	15.0
SABR	15.2	27.3	12.1	12.1	9.1	9.1	15.2
ΔHU_{max} (HU)	10-20	20-30	30-40	40-50	50-60	>60	Unknown
CONV1	13.8	13.8	13.8	13.8	0	13.8	31.0
CONV2	10.0	35.0	15.0	5.0	10.0	10.0	15.0
SABR	15.2	27.3	12.1	12.1	9.1	9.1	15.2

Table 1

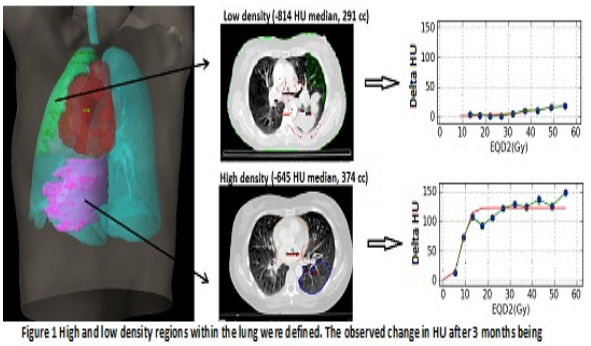

Figure 1 High and low density regions within the lung were defined. The observed change in HU after 3 months being drastically different between both lung regions, supports our model assumption.

Conclusions

Baseline CT characteristics allow to identify patient-specific and regional differences in sensitivity for radiation-induced lung damage. This may be used for further treatment individualisation.

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OC-0254

Dosimetric predictors for urinary symptoms using longitudinal endpoint and multiple events models

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Purpose/Objective: As urinary symptoms tend to recur throughout follow-up, conventional method of analysis using cumulative peak event and time-to-event may not be optimal to uncover the dosimetric-symptom correlates. We assessed the bladder dosimetry and urinary symptom correlates using longitudinally-defined endpoints and using recurrent event models which are contrasted to the conventional analysis methods.

Materials and Methods: In this study, 754 dose-surface information and their corresponding specific urinary symptoms (dysuria (D), haematuria (H), incontinence (I) and frequency (F)) from a cohort of patients who received prostate radiotherapy in the RADAR TROG 03.04 trial were analysed. The dosimetric-symptom correlates were analysed using; 1) conventional methods (cumulative incidence(peak) and time-to-event(Cox) analysis), 2) longitudinally-defined endpoint (mean symptoms), 3) recurrent event models using the Andersen-Gill extension of the Cox regression model for counting process (AG) & generalised estimating equation (GEE) models. Dosimetric-symptom correlates were contrasted for the different analytic methods.

Results: For dysuria and haematuria, stronger relationships were found to the dose indices using peak and Cox models compared to mean symptom, AG and GEE models. Despite the different strength of relationship, dose-surface of the bladder receiving higher than 65 Gy (S65) and S70 consistently show strong relationship to dysuria. S60 to S65 are the most significant for H_{peak} , H_{GEE}, H_{Cox} and H_{mean}. None of the dosimetric indices satisfy the proportional hazard assumption for $H_{AG.}$ For urinary incontinence and frequency, stronger relationships for dosimetric indices were found for AG, GEE and to lesser extent mean score model while both peak and Cox models do not result in significant or show trend towards significance. S35 to S40 were found to be the most significant for F_{GEE}, F_{mean} and F_{AG} while S20 to S25 for I_{AG} and I_{mean}.

Conclusions: The use of peak or time-to-event model alone is not optimal in assessing dose-volume correlates for certain urinary symptoms endpoints. Dosimetric-symptom correlates analysis should be supplemented by longitudinally-defined endpoints and/or using recurrent event models to account for multiple events per patient.

OC-0255

Multi-variable models of acute urinary toxicity: final results of a large prospective study

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Purpose/Objective: To assess clinical and dosimetric factors affecting acute urinary toxicities on a large cohort of patients treated with external beam radiotherapy (RT) for prostate cancer with radical intent.

Materials and Methods: The final dataset of a prospective multicentre study was considered. It included 542 patients treated with conventionally (74-80 Gy at 1.8-2 Gy/fr) or